AN ANALYSIS OF PROGRAM OPTIONS FOR GIFTED MIDDLE SCHOOL STUDENTS

DISSERTATION

Presented to the Graduate Council of the University of North Texas in Partial Fulfillment of the Requirements

For the Degree of

DOCTOR OF EDUCATION

By

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The purpose of this study was to compare three different types of programming options for identified gifted and talented middle school students. Those programs included an extracurricular enrichment program, an honors academic program, and differentiated curriculum provided by the regular classroom teacher in heterogeneous classrooms. To carry out the purpose of the study, seniors in three high schools who participated in the middle school gifted programs were surveyed to ascertain the number of Advanced Placement courses taken, the number of Advanced Placement examinations taken, scores on Advanced Placement examinations, scores on the Preliminary Scholastic Aptitude test, and the number of leadership positions held while in high school.

The study targeted 12th grade students identified as gifted and talented. A total of 239 students who attended three high schools from two school districts in the North Texas metropolitan area participated in this study. Ninety-one students attended the middle school with the extracurricular enrichment program, 80 students attended the middle school with the honors program, and 68 students attended the middle school with heterogeneous classrooms. The middle schools were similar in their
socioeconomic makeup, and the students were identified for the gifted and talented programs using comparable criteria.

The data collected and statistically analyzed suggest that students who participated in the more rigorous academic program took more Advanced Placement courses in high school, scored higher on Advanced Placement examinations, and scored higher on the Preliminary Scholastic Aptitude Test than students from the enrichment or heterogeneous grouped programs. Students who participated in the extracurricular enrichment program pursued more leadership positions in the highest category of five or more positions held. The students who were in heterogeneous classrooms scored lower in all areas.

The significance of the study is that, program options did impact the high school choices and performance of students. These findings have impact on appropriate instructional decisions concerning programming for gifted and talented students.
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CHAPTER 1

INTRODUCTION

A push for the inclusion of all student populations into heterogeneous grouped classrooms at the middle school level gained momentum when Robert Slavin published his report of ability grouping in 1987. Slavin admits he had omitted studies dealing with the top and bottom 5% of the student population from his study. However, school personnel making decisions about middle school programming have not dealt with that footnote. Thus, many professionals in the field of gifted education are concerned about middle schools meeting the advanced academic needs of the gifted students as well as their affective (social and emotional) needs (Rogers, 1991).

In many middle schools, the student's day is divided into six periods of 45 minutes in length. Within each class are students who can read and comprehend as well as most college learners; students who can barely decode words, comprehend meaning, or apply basic information; and students who fall somewhere between these extremes (Tomlinson, 1995). Teacher training or professional development do not provide teachers with the necessary skills to address the needs of so many different levels of
ability in such a short amount of time. Choosing a program option or options which best meet the needs of gifted learners at the middle school level is important.

National Goals 2000 calls for our country to be competitive with other countries and to score high on standardizing testing (Riley, 1992). At the same time it dictates no elitism and portends the underlying philosophy that all children are the same (Winner & Karolyi, 1998). Can these two philosophies coexist? In looking at what is beneficial for the gifted student, Rosselli (1996) stated gifted education operates with the following assumptions:

1. All students progress through challenging material at their own pace and gifted students often reach mastery in significantly less time than other learners.
2. Achieving success for all students is not equated with achieving the same results for all students.
3. Most students gain self-esteem and self-confidence by mastering work that at first seems slightly beyond their grasp.
4. Gifted middle level students need to be able to enter, exit, and re-enter the gifted program as their interest and abilities changes.
5. Gifted students do benefit from associating with students of different abilities and backgrounds.
6. Grouping of gifted learners should be based on students' abilities and talents in the specific areas.
7. High-ability middle level students need access to a variety of challenging resources. (p. 14)

According to Renzulli and Reis (1998), "one of the problems facing schools is the absence of curricular differentiation and academic challenge for some of our most able learners" (p. 63). Gallagher concluded an irony of the excellence/equity balancing act is American society makes enormous investments in the education of gifted students at the higher education
level. Students come from all over the world to attend our law schools, medical schools, and business schools (Gallagher, 1991). However, elementary and secondary educators must constantly battle for funding of gifted education programs in public schools (Gallagher, 1991).

There are many types of options available to meet the needs of gifted students at the middle school level. Some of these options are mentorships, curriculum differentiation, acceleration, enrichment, advanced academic classes, and curriculum compacting. In this study, three programming options for middle school students will be examined as to their impact on students' high school choice of advanced academic studies, success on standardized measures, and pursuit of leadership roles. These three options are enrichment (nonacademic activities such as publishing the school newspaper, community service, etc.), honors classes, and some differentiation of curriculum (providing extensions of content beyond basic level). Students in each of the three area middle schools in the Dallas/Fort Worth metropolitan area had access to at least one of these options. All students are currently seniors in three area high schools with enrollments of more than 2,000 students.

The three criteria selected for the high school students include enrollment in Advanced Placement courses, Prescholastic Aptitude Test scores, and leadership roles in high school. Advanced Placement courses prepare students for a college curriculum. Students take examinations in Advanced Placement courses and are awarded college credit based on their
performance on the Advanced Placement examinations. Preliminary Scholastic Aptitude Test scores are used to identify National Merit semifinalists and Commended Scholars. All of the students in this study have Preliminary Scholastic Aptitude Test scores. Leadership roles indicate the students' involvement in the school community outside of the classroom.

Statement of the Problem

The problem of this study is a comparative analysis of whether three programming options previously used in middle school services for gifted students have any impact on the number of Advanced Placement courses they pursue, the scores received on Advanced Placement examinations, their Preliminary Scholastic Aptitude Test scores, or their number of leadership roles participated in at the high school level.

Research Questions

This study addresses the following research questions:

1. Are there differences in the number of Advanced Placement courses taken by students who participate in an enrichment program, an advanced academic-based middle school program, or are served in heterogeneous grouped classrooms?

2. Are there differences in the number of leadership positions held by students who participate in an advanced academic-based middle school
program, an enrichment program, or are served in heterogeneous grouped classrooms?

3. Are there differences in the scores on Advanced Placement examinations taken by students who participate in an advanced academic-based middle school program, an enrichment program, or are served in heterogeneous grouped classrooms?

4. Are there differences in the scores on the Preliminary Scholastic Aptitude Test examinations by students who participate in an advanced academic middle school program, an enrichment program, or are grouped in a heterogeneous classroom?

Research Hypotheses

1. There are statistically significant differences in the number of Advanced Placement courses taken by students who participate in an enrichment program, an advanced academic-based middle school program, or are served in heterogeneous grouped classrooms.

2. There are statistically significant differences in the number of students who attempted an Advanced Placement examination by students who participate in an advanced academic-based middle school program, an enrichment program, or are served in heterogeneous grouped classrooms.

3. There are statistically significant differences in the scores on Advanced Placement examinations taken by students who participate in an
advanced academic-based middle school program, an enrichment program, or are served in heterogeneous grouped classrooms.

4. There are statistically significant differences in the scores on Preliminary Scholastic Aptitude Tests taken by students who participate in an advanced academic-based middle school program, an enrichment program, or are served by heterogeneous grouped classrooms.

4. There are statistically significant differences in the number of leadership positions held by students who participate in an advanced academic-based middle school program, an enrichment program, or are served in heterogeneous grouped classrooms.

Limitations

This study is a comparative analysis of programming options used at three similar middle schools in North Texas suburbs. The study is limited for several reasons:

1. The population is limited to students from two North Texas school districts.

2. Results are generalized only to students from similar middle schools using similar program options.

3. The results are limited because of the small number of students responding to the survey.
4. Intervening variables such as differences in parenting skills, counseling intervention and advice, and teaching skills of middle school teachers are not controlled in this study.

5. The identification criteria used by the schools for the two gifted programs are very similar, however, group tests administered in single sittings and the subjective data used are less sophisticated testing measures.

Assumptions

It was assumed that the students' written responses to the student survey questions that could not be verified were true. These were the questions that concerned parental education and some leadership positions.

Significance of the Study

This study is significant because it adds to the limited body of knowledge on actual outcomes of different types of programming. Three types of programming options used with middle schools students are looked at in this study. This study examines the impact each type of programming has on choices that the students made in their high school careers in terms of advanced course work attempted and involvement in leadership positions. Their success on standardized national tests were also examined. These findings may have economic significance in terms of identifying the most cost effective instructional format. Do any of these options impact high school success, thus taking the next logical step in efforts to produce more competent professionals in our society?
Definition of Terms

**Acceleration**--students assigned to a section, course, or grade level working ahead of their age-grade placement in a specific content area. Acceleration also means skipping an entire grade level.

**Advanced academic program**--honors courses. Advanced Placement courses in grades 11 and 12. Preadvanced Placement courses in grades 6 through 10. College Board designs the Advanced Placement courses and offers Advanced Placement examinations at the end of each course. Students may receive college credit based on examination scores.

**Advisory period**--a short period in the student's schedule when he or she is assigned along with other students to a particular teacher to address the student's affective needs.

**Affective needs**--social and emotional needs such as an awareness of possible development paths, awareness of feelings and conscious attention to them, self-esteem, self-concepts, self-judgment, asking existential questions, and awareness of one's real self.

**Cluster grouping**--placing gifted students together in groups of five or more in assigned regular education classes.

**Enrichment**--(as used in the schools in this study) activities outside of the classroom provided for gifted students such as writing a school newspaper, community service, and so forth.

**Gifted**--students identified as gifted in this study are identified on the basis of general intellectual ability and academic performance. Both
objective and subjective data were used. The objective test data included a school abilities test (Cognitive Abilities Test [CogAT]--95% or above) and an achievement test (Iowa Test of Basic Skills--90% or above). The subjective data included a parent questionnaire (based on 14 gifted characteristics originally developed by May Sego and revised by Curry, Sato, & Kaplan [cited in Birdville ISD, 1987]) and a teacher rating scale which was adapted from Renzulli's (1981) teacher rating scale. In all three schools the questionnaire and rating scale are very similar. The school abilities test is emphasized and the students had to have a score in the 95th percentile.

**Heterogeneous grouping**--students with many different ability levels assigned together in one classroom.

**Leadership**--for the purpose of this study include students holding office (president, vice president, secretary, treasurer, or team captain) in campus organizations that are governance (student government), honor (National Honor Society, Key Club), content (Spanish, mathematics, science), athletic, or service (band, Thespians) in nature.

**Middle school**--schools designed with the intent of serving the needs of young adolescents, usually comprised of grades 6 through 8.

**PEIMS**--Public Education Information Management System. This reporting system is required by the Texas Education Agency (1996b [TEC §42.006]). According to the Texas Education Agency (1996b), it
documents for districts information such as attendance, student population, general demographic data, enrollment, test data, and so forth.

Summary

Program options and their impact on middle school gifted students' high school success are examined and determined in this study. This success is being measured in terms of the number of Advanced Placement courses they have taken, their scores on the standardized Preliminary Scholastic Aptitude Test, Advanced Placement examinations, and the number of leadership positions held in high school. The study is significant in that it adds to the body of knowledge about middle school programming for gifted students. If no variance is found in these three options, then other factors must contribute to student choices and performance.
CHAPTER 2

REVIEW OF LITERATURE

Recent research in the field of middle school gifted programs and their effectiveness is somewhat limited. Practitioners in the field of gifted education express concern about middle school philosophy and its effect on programming for the gifted student. Recent research studies include efforts to define giftedness, the process of identifying gifted students (at this level), educational reform in the middle school, the development of current middle school practices as they relate to gifted education, programming options for gifted students, and equity versus excellence. Literature relating to each of these areas was reviewed.

Definition of Giftedness

Lewis Terman (1925) was the first person in this country to attempt to scientifically define the term "giftedness." In the 1920s, Terman defined giftedness as having a very high intelligence quotient. He then developed the Stanford-Binet Intelligence Scale to assess intelligence. Consequently, for a long period of time, many educators equated an intelligence quotient score in the top 2% as gifted (Terman, 1925).

Minority groups, particularly African-American and Hispanic, have questioned the fairness of the Stanford Binet Intelligence Scale and other
aptitude tests because of the standard vocabulary used in this and other intelligence test (Coleman & Gallagher, 1995; Gardner, 1991; Grantham & Ford, 1996). Aptitude tests can underreport intelligences thereby locking out students who might qualify if reviewed in a broader sense. The fact that African-American and Hispanic students are typically underrepresented in gifted programs throughout the country lends credence to concerns about the use of ability tests based on standard vocabulary. There has been a significant rise in the number of cases referred to the Office of Civil Rights by American and Hispanic families usually in the South. The primary complaint is the identification of students. The proportion of ethnic minority students in gifted programming is very small (Brown, 1997; Darling-Hammond, 1990b).

In the 1950s, the identification of giftedness was broadened to include creativity (Guilford, 1967; Torrance, 1962). Giftedness was considered not only the academic abilities needed to master content in terms of higher achievement and learning at an accelerated pace but also the ability to look at things in new and innovative ways. The words "talent" and "creativity" begin to appear in definitions of giftedness. In 1971, the United States Commissioner of Education, Sidney P. Marland (1972), presented a report to Congress in which he stated:

Gifted and talented children are those identified by professionally qualified persons who by virtue of outstanding abilities are capable of high performance. These are children who required differentiated educational programs and/or services beyond those
normally provided by the regular school program in order to realize their contribution to self and society.

Children capable of high performance include those with demonstrated achievement and/or potential ability in any of the following areas, singly or in combination:

1. general intellectual ability
2. specific academic aptitude
3. creative or productive thinking
4. leadership ability
5. visual or performing arts
6. psychomotor ability. (p. 2)

Many states including Texas use this definition. Texas removed the psychomotor component from its programming definition in the 1970s because athletic programs function under the University Scholastic League. According to the current Texas Education Code, gifted and talented student means:

a child or youth who performs at or shows the potential for performing at a remarkable high level of accomplishment when compared to others of the same age, experience, or environment and who: (a) exhibits high performance capability in an intellectual, creative, or artistic area; (b) possesses an unusual capacity for leadership; or (c) excels in a specific academic field. (Texas Education Agency, 1995, Section 29.123)

In the late 1970s and early 1980s integrative theories for defining giftedness began to emerge. Joe Renzulli (1986) developed the Enrichment Triad model or the three ring model of interactive behaviors. These three clusters of traits include: above-average general and/or specific abilities, high levels of task commitment (motivation) and high levels of creativity.

A psychosocial definition of giftedness was proposed by Abraham Tannenbaum (1983). Tannenbaum's (1983) definition held the premise
that gifted students have a "potential for becoming critically acclaimed
performers and exemplary producers of ideas in spheres of activity that
enhance the moral, physical, emotional, social, intellectual, or aesthetic life
of humanity" (Tannenbaum, 1983, p. 86).

Sternberg (1986) developed a triarchic theory of intellectual
giftedness. Sternberg defined giftedness in three ways: (a) analytical (good
in analysis, evaluation, judgment, and comparison skills), (b) creatively
(good in invention, discover coping with novelty, and imagination skills),
and (c) practicality (good in application, implementation, execution, and
utilization skills). He conducted a study of high school students from
around the country in 1996. High school students were identified as gifted
in one of three ways or all of the three ways. Sternberg's Triarchic Abilities
Test developed in 1993 was used to measure the three types of skills. The
results of this test confirmed his hypothesis that students instructed in the
more diverse way (analytical, creative, and practical) outperformed the
traditionally instructed students regardless of how they were tested
(Sternberg, 1998).

Howard Gardner (1983) presented the concept of multiple
intelligences as a way to understand giftedness. Gardner stated that there
are seven different types of intelligences: linguistic, logical/mathematical,
spatial, musical, bodily-kinesthetic, interpersonal, and intrapersonal
intelligence. Many who believe that gifted education is elitist have used his
work to support their belief. They hold the opinion that if all children are
gifted, special programs are not needed for the academically gifted (Winner, 1998).

Gagné (1985) presents a dichotomous model in which he looks at distinctions between giftedness and talent. He stated that giftedness is above average abilities in one or more domains of ability (intellectual, social, psychomotor). Talent refers to "performance which is distinctly above average in one or more of the fields of human performance" (Gagné, 1985, p. 108).

Recently, we have seen the uniting of education and science in an effort to address how children learn. In 1991, Caine and Caine took Paul MacLean's work on the "triune brain theory" and related the significance of his findings to how people learn. Their book Making Connections: Teaching and the Human Brain (Caine & Caine, 1991) was a groundbreaking work in getting educators to consider the many biological factors such as how memory functions and what must happen for information to be stored in long-term memory and how that impacts learning. As we continue to discover how the brain impacts learning and what can be done to increase the brain's impact on learning, teachers are beginning to consider how this information translates to what goes on in the classroom. Eric Jensen (1996), one of the latest commentors in brain theory and education, supports the demise of special education programs including gifted programs. Jensen stated that "there is no place for so-called 'gifted and talented' learners in brain-based programs" (p. 317), because all children
have strengths in one or more of the areas of multiple intelligence and academic intelligence in only one area. Jensen stated that in brain-based learning, there is no ability grouping because ability grouping is a comparison of two participants and is an irrelevant activity. According to Jensen (1996), the whole presumption about who is gifted and who is not "is based on an outdated model" (p. 318). This type of giftedness should be handled in regular instruction as should the other areas (Jensen, 1996). This idea of inclusion is rapidly growing throughout the country because decision makers can say it is built on sound research and it is, not surprisingly, cost effective (Jensen, 1996). The concepts of multiple intelligences (all children being gifted), inclusion, and brain-based learning are all used as supporting evidence by groups who wish to eliminate special programs for academically gifted students.

Sternberg (1998) offered a counterpoint to Jensen's (1996) philosophy. Sternberg's study supports the idea of matching instruction patterns with ability patterns. Instead of identifying the top 1% or 2% of students as gifted, he identified students as gifted in one of three ways—analytical, creative, or practical. Analytical meant students were good in evaluation, judgment, and comparison. Creative identified students who were good in invention, discovery, coping with novelty, and imagination skills. Practical consisted of students good in application, implementation, execution, and utilization skills. Sternberg found that students who were
taught in ways that matched their pattern of abilities outperformed students taught in ways that were a poor match of abilities.

Identification of Gifted Students

Just as the definition of giftedness has changed and is changing, the data used to identify gifted students has changed and is changing. Research was examined that looks at the procedures used to place students in gifted programs. Identification of students for gifted programming is a difficult and often confusing process. While educators are struggling in an attempt to make gifted programs more inclusive and available to diverse populations, the methods of identification have not greatly changed. Major errors that distort identification include: definitions that are elitist and exclusive in nature, confusion about the purpose of identification, violation of educational equity, inappropriate use of testing, weighing some criteria more than others, and exclusive program design (Richert, Alvino, & McDonnel, 1982).

Most programs tend to identify white, middle class and academically strong students. Often procedures used to identify create hierarchies that exclude many students. Such programs make distinctions between giftedness and talents or speak of degrees of giftedness. Richert et al. (1982), assert that giftedness emerges through the interaction of learning or experience and innate abilities. The continual push for excellence, which
relies on standardized test scores, has increased exacerbating the equity issue.

Frequently intelligence quotient tests or abilities tests are used in ways not intended. These tests are inappropriately used to identify achievement or specific academic strengths rather than general intellectual ability. Such tests are also being used to identify creativity and leadership inappropriately (Richert et al., 1982). Much of the time, data is combined in indefensible ways, used at inappropriate times in the identification process, or is unreliable. Many times conformity rather than giftedness is being measured.

For many years identification meant obtaining a certain cutoff score on a standardized intelligence quotient test. This score usually represented the top 2% to 4% of the population on the Stanford Binet Intelligence Test (Terman & Oden, 1947). This practice came under criticism by many groups because equity in representation of the general population was inadequate. The intelligence quotient test all but disappeared from use as the sole determiner of giftedness in the school setting by the 1980s. Multiple criteria appeared on the scene that included intelligence quotient tests, achievement tests, and teacher observations (Colangelo, 1991).

In recent years, the identification of gifted students has stressed multiple criteria that identify a more inclusive population in terms of areas of giftedness and ethnic representation. At the University of South Carolina, O'Tuel (1994) conducted a study that addressed these concerns.
The Academic Programs for Gifted With Excellence and Equity (APOGEE) serve over 3,000 students in 30 schools in eight school districts. The program addressed equity in identification of gifted and talented students. The APOGEE classes consisted of the top 25% of students from groups such as disadvantaged, minorities, underachievers, limited English speakers, and students with disabilities (O'Tuel, 1994). This population included 5% of the students identified by regular procedures and the additional 20% of the students not identified by conventional means. Teachers received a 445-hour graduate course to train them in implementing a talent development program that was based on student-centered curriculum that included group work, projects, self-regulation, and choices. Giftedness moved from a single-dimensional intellectual component (IQ) to the concept of gifted potential. Giftedness became a multi-dimensional concept influenced by innate potential, learning, and personal experience (Richert & Wilson, 1993). Gifted potential consists of ability, creativity productivity, performance, and motivational and emotional values. The National Report on Identification (Richert, Alvino, & McDonnel, 1982) recommended this shift to gifted potential.

Previous test scores, grades, nomination, outside activities, and other products determined eligibility for the APOGEE program. Parents, teachers, and students could make nominations to the program. Preliminary results after the first year found a statistically significant gain in pre- and post-scores on the Cornell Test of Critical Thinking, a statistically
significant increase in the Coopersmith Self-Esteem Inventory, attendance increased, behavioral problems decreased (discipline referrals), and students reported positive attitudes about themselves (O'Tuel, 1994).

James Borland and Lisa Wright (1994) conducted another study that looked at identification in a more comprehensive way. They looked at identifying young, potentially gifted, economically disadvantaged students. Project Synergy conducted this study which was funded by the United States Department of Education. Project Synergy established certain principles before determining the identification process.

1. The potential for academic giftedness is present in roughly equal proportions in all groups in our society.

2. Gifted education is a form of special education.

3. Identifying economically disadvantaged, potentially gifted students differs from identifying other gifted students.

4. Knowledge needed to identify disadvantaged gifted students is to be found in school classrooms, not the research literature.

5. The human being is the identification instrument of choice.

6. The concept of best performance is valid in identifying giftedness in young economically disadvantaged children (Borland & Wright, 1994).

The identification process consisted of three phases: Phase 1--Screening, Phase 2--Diagnostic Assessment, and Phase 3--Case Study and Placement Decision. Screening consisted of classroom observation, multicultural curriculum-based enrichment activities, standardized
assessment (draw-a-person test), portfolio assessment, and teacher nomination. From this screening process a candidate pool was determined (Borland & Wright, 1994).

The second phase of identification involves the Peabody Picture Vocabulary Test, Test of Early Mathematics Ability 2, Test of Early Reading Ability 2, Matrix task, literature-based activity, interview, and parent input. An academic profile for each candidate was developed (Borland & Wright, 1994).

The third phase included a decision about the presence of special needs and the appropriate intervention to meet those special needs (Figure 1). The conclusion drawn from the project acknowledged that the process was time and labor intensive and not necessarily practical for implementation in a typical school setting. However, their work did demonstrate that even the most difficult schools have academic giftedness (Borland & Wright, 1994).

The Texas Education Agency (1996a) stated that in Texas public schools, the identification process for the gifted program should match the type of program being offered. It should have at least three criteria both subjective and objective, these criteria should be equally weighted and should include an abilities test.
Figure 1. Component of Phase III of the identification process: Case study and placement decision. From "Identifying Young, Potentially Gifted, Economically Disadvantaged Students," by J. Borland and L. Wright, 1983, Gifted Child Quarterly, 38(4), p. 166. Classifications are made through a case study process relying on judgment and consensual assessment.

Educational Reform and the Middle School

It might surprise some to realize that the original goals for the junior high school were not very different from the current goals of the middle school movement. The Committee on Economy of Time in Education made the first specific mention of a separate division of secondary education in 1913. School districts all over the country began to experiment with the 6-3-3 division in schools (Gruhn & Douglas, 1971). In
theory, junior high schools, grades 7 through 9 were based on characteristics of young adolescents and concerned with all aspects of growth and development. The junior high school was designed to provide work in learning skills while adding more depth to the curriculum. The curriculum emphasized guidance and exploration, independence and responsibility, and offered a transition to the high school years (Tye, 1985). Unfortunately the junior high school concept or curriculum never lived up to the original intentions. Many junior high schools actually began to resemble "little high schools." Many teachers who had prepared for high school found themselves teaching in junior highs. Junior highs became a way station or intermediate step to their real aspiration (Lounsbury, 1960). In 1961, the ASCD published The Junior High School We Need (Grants, Noyce, Patterson, & Robertson, 1961). This report identified the best contemporary junior high schools as having moderate size, block-of-time instruction, flexible scheduling, teachers prepared for and devoted to teaching young adolescents, and modern instructional techniques (Grants et al., 1961). The study suggested that the junior high school of the future be ungraded, without bells, rich in guidance services, and make modern use of technology (even before the computer age). The new junior high school never materialized. Alexander and Williams (1965) recommended the removal of the ninth grade from the middle years education. What emerged was a new concept of middle school that would be less controlled by high school and freer to adapt to the real needs of young adolescents. From
1965 until 1975, many schools across the nation experimented with the idea of a "middle school."

In 1975, ASCD published a subsequent report *The Middle School We Need*. There existed a great similarity between the pedagogical vision of the aging junior high school and the emerging middle school. However, once again there existed the gap between what should be and what is actually being practiced. Some held that many middle schools were established with other agendas rather than providing appropriate educational opportunities for young adolescents. These agendas included: desegregation, increasing space in elementary schools (a so-called baby boom was responsible for increased elementary enrollment), and moving the ninth grade to high school would keep those community high schools (those losing enrollment) open (George, Stevenson, Thomason, & Beane, 1992). Only in the late 1980s and early 1990s did middle school planners begin to implement some of the tenets of how middle schools should function.

The Carnegie Council on Adolescent Development (1989) issued the report it presented in *Turning Points: Preparing Youth for the 21st Century*. The report urged schools to provide young adolescents with:

1. **Small communities for learning within the larger school buildings.** The commission urged schools to create "smallness within bigness" a concept that has been an important aspect of the middle school lexicon for decades.

2. **A core academic program for all learners.** The commission spelled out a very general set of curriculum goals similar to programs advocated by many middle school educators.

3. **Success experiences for all students.** The commission urged the elimination of tracking and between-class ability grouping,
promotion of cooperative learning, and other experiences likely to broaden the range of students experiencing success in the average middle school.

4. Empowerment for teachers and administrators in making decisions about the experiences of middle grade students. The organization of schools into academic teams and shared decision making are central components of the middle school concept; the research indicates that middle schools have been moving in this direction for the last 20 years and that 6-8 [grade] middle schools are much more likely to employ these practices than the 7-9 [grade] junior high school.

5. Teachers who are expert at teaching young adolescents. The attempt to develop programs to prepare and certify such teachers has been at the top of the middle school agenda.

6. Improved academic performance fostered through health and fitness. Here the commission moved out in front of typical middle school practices, although not out of line with typical middle school philosophy.

7. Families reengaged in the education of young adolescents. The commission recommended giving families meaningful roles in school governance and other concepts that are not currently the vogue in American middle schools, but which would find support among middle school educators.

8. Schools that are reconnected with their communities. The commission recommended service projects, partnerships, and other collaborative efforts that would enhance any middle school program. (Carnegie Council on Adolescent Development, 1989, pp. 12-13)

In 1989, Alexander and McEwin conducted a national survey by sending out questionnaires to schools serving at least seventh and eighth graders all across the United States. They found that actual changes in the structure of the middle school occurring in organization and curriculum. In 1968, fewer than 10% of the schools reported interdisciplinary team organization and in 1988 one-third reported such organization (Alexander & McEwin, 1989). Nearly 400 reported having advisor-student programs (teachers meeting with students in a nonacademic setting to discuss social
matters). Many schools proposed a rationale for responding to the characteristics and needs of early adolescence. Changes in curriculum have occurred more slowly. Most middle school advocates recommended the move from a specialized subject-area curriculum to an issue-centered curriculum taught in interdisciplinary units (Vars, 1987). However, informal surveys showed that if middle schools are doing interdisciplinary instruction at all, it is in short units taught two or three times per year around a central theme (Vars, 1987).

A third study conducted by Cawelti (1988) for Association for Supervisor Curriculum and Development (ASCD) reported similar results. Cawelti’s study had a better research design in that he used a random sampling from members in ASCD who worked with middle schools in some capacity. However, it was limited to members of ASCD. Cawelti found that middle school programs were now more likely to use a teacher-advisor program, flexible schedules, provide staff development activities that extend teaching strategies appropriate for students, use interdisciplinary teaching and transition activities.

The effective Middle Grades Program at the John Hopkins Center for Research on Elementary and Middle Schools conducted a fourth study based on a survey of principals (Epstein, 1990). This was a national survey sent to middle school principals across the United States. One problem with the study is that the center reported only a 30% response. This survey
found school principals committed to early adolescent education would increasingly adopt the recommendations presented in the report by the Carnegie Commission.

These four surveys have all but cemented the continual growth of the middle school movement. In Texas, many parents and educators question the level of academic rigor in the middle schools. The emphasis on TAAS (Texas Assessment of Academic Skills) test scores and the offering of fewer honors courses at the middle school level are two factors that have contributed to their concern as evidenced by editorials in newspapers throughout the state. The TAAS test is a test based on basic competencies that students should master at each grade level in the four core areas (mathematics, language arts, social studies, and science). The tests are administered as follows: third grade--mathematics and reading; fourth grade--mathematics, reading, and writing; fifth, sixth, and seventh grade--mathematics and reading; eighth grade--mathematics, reading, writing, science, and social studies; and tenth grade, exit tests which the student must pass before graduation from high school. The individual campus scores make up a significant part of the campus's AEIS (Academic Excellence Indicator Score) report. This report determines if the campus is unacceptable, acceptable, recognized, or exemplary. These campus report cards are published by the media. The campus rating is assigned a score and this score is incorporated into each teacher's appraisal as part of the
new PDAS (Professional Development and Appraisal System) (Texas Education Agency, 1997).

According to Regional Service Center personnel (center established by the Texas Education Agency to assist districts with a designated region), most middle schools are currently offering only honors courses in mathematics on a consistent basis (Kelley, personal communication, May 10, 1998). In larger middle schools, honors language arts is often offered (Kelley, personal communication, May 10, 1998). Because of the new state graduation program (Distinguished Achievement Program), and the emphasis on vertical alignment, many middle schools are considering expanding their honors course offerings (Hiatt, personal communication, April 13, 1998).

Another area of concern expressed by middle school administrators is the lack of middle school teacher certification. Too often middle school teachers are waiting for the opportunity to move to the high school. This is particularly true of mathematics teachers, science teachers, band directors, and athletic coaches (teaching in content areas) (George et al. 1992).

Two practices embraced by the middle school movement are cooperative learning and heterogeneous grouping. According to Slavin (1988), who conducted a research study on the achievement of elementary students when placed in heterogeneous groups, "grouping by ability was bad for low achieving students" (p. 69). Heterogeneous grouping was positive
for average and low achieving students and beneficial for gifted students. Slavin (1988) did not ask in his study whether programs designed to provide differentiated education for gifted or special education were effective. He systematically omitted these programs because they "involve many other changes in curriculum, class size, resources, and goals that make them fundamentally different from comprehensive grouping plans" (Slavin, 1988, p. 7).

Kulik and Kulik (1982, 1984, 1987) over several years have looked at ability grouping of students for special instruction. Their research looked at many studies and information provided on the topic of grouping students for learning. In critiquing Slavin's work, they reached the following conclusions:

1. Slavin's work was based on subjective reviews and informal analysis of the literature on grouping.

2. His conclusion about factors that affect grouping effectiveness should be regarded as speculative.

3. Slavin offers no statistical tests of his hypotheses.


Kulik and Kulik (1989) conducted a meta-analysis of three major types of grouping programs: (a) ability grouping programs for all students,
(b) separate instruction for talented students, (c) accelerated instruction for talented students. They concluded that research showed:

High-aptitude and gifted students benefit from programs that provide separate instruction for them.
Academic benefits are positive but small when the grouping is done as a part of a broader program for students of all abilities.
Specially designed programs for gifted students produced positive and moderate benefits.
Academic benefits are large in acceleration programs.
Ability-grouping programs have little or no effect on self-esteem.
(cited in Colangelo, 1991, p. 190)

The other middle school practice that has impacted the gifted student is cooperative learning. Cooperative learning is a technique for grouping students within a heterogeneous classroom. There are several different types of staff development models that teach teachers the appropriate use of cooperative learning (O'Banon, personal communication, June 19, 1998).

The most popular cooperative learning model in Texas, according to regional staff development information in Johnson, Johnson, and Holubic's (1990) "Brown Book Training" (introductory) and "Green Book Training" (advanced) (Johnson et al., 1990). The key premise of this training is that students, within a classroom, are divided into small groups to complete specific tasks or solve specific problems. Each small group has members with differing abilities. The rationale suggests that the presence of a high ability student will raise the achievement level of other students and the high ability student can learn social skills (Johnson et al., 1990).

Robinson and Robinson (1991) concluded from their research on the impact of cooperative learning on the gifted student that instead of making
decisions on what is expedient or politically correct, decisions should be made on the basis of what is best for each student--high as well as low ability, high and low achieving, regardless of ethnic or racial background. In this way we can achieve an optimal match between each student's educational needs and their ability, achievement, and interests.

Not only has the middle school movement impacted services available to meet the academic needs of gifted students but the national direction for education has also added to the confusion. The National Goals 2000 were presented to the public in 1994 by the United States Secretary of Education, Richard W. Riley. Riley (1994) stated "The GOALS 2000 represents the culmination of years of hard work to turning around and rebuilding this nation's education fortunes, and to creating a comprehensive approach to education that will improve learning at every level--from early childhood to adulthood" (p. 1). These goals are listed by the Department of Education in the following way:

SCHOOL READINESS--All children in America will start school ready to learn.

SCHOOL COMPLETION--The high school graduation rate will increase to at least 90 percent.

STUDENT ACHIEVEMENT AND CITIZENSHIP--All students will leave grades 4, 8, and 12 having demonstrated competency over challenging subject matter including English, mathematics, science, foreign languages, civics and government, economics, arts, history, and geography, and every school in America will ensure that all students learn to use their minds well so they may be prepared for responsible citizenship, further learning, and productive employment in our nation's modern economy.

MATHEMATICS AND SCIENCE--United States students will be first in the world in mathematics and science achievement.
ADULT LITERACY AND LIFELONG LEARNING--Every adult American will be literate and will possess the knowledge and skills necessary to compete in a global economy and exercise the rights and responsibilities of citizenship.

SAFE DISCIPLINE AND ALCOHOL AND DRUG-FREE SCHOOLS--Every school in the United States will be free of drugs, violence, and the unauthorized presence of firearms and alcohol and will offer a disciplined environment conducive to learning.

TEACHER EDUCATION AND PROFESSIONAL DEVELOPMENT--The nation's teaching force will have access to programs for the continued improvement of their professional skills and the opportunity to acquire the knowledge and skills needed to instruct and prepare all American students for the next century.

PARENTAL PARTICIPATION--Every school will promote partnerships that will increase parental involvement and participation in promoting the social, emotional, and academic growth of children. (Riley, 1994, p. 2)

Gallagher (1991) stated that the National Goals 2000, which have been endorsed by the 50 governors, demonstrates the ambivalence of the American society toward excellence and equity. Goal one, the readiness of all students to learn, suggests the expectation that all students begin at the same level. Goal three calls for competency for all students. Goal four demands that American students be first in mathematics and science. There is no goal that addresses the movement from competency to first. We want to be the best but we want all students to be at the same level of readiness when beginning school. Gallagher (1991) asks the question, "Do we have the resources and energy to do both?" (p. 13). Gallagher believed that our society's resistance to providing a quality education for the best and brightest of our students is a self-destructive act and will make us second-class in business, education, and science, thus increasing our
inability to compete in the international economic and technological markets. According to Gallagher, a serious problem for gaining support for educating gifted students is perhaps more of a values problems (championing the underdog) rather than an education problem.

Perhaps the only argument that will work for gifted students is one of "enlightened self-interest" (Gallagher, 1991, p. 18). If we help these students reach their potential, we are strengthening our society and providing more competent professionals. The desire to use the talents of these students often translates into resources when we see the benefit to society.

Programming Options

There are many programming options available for serving the gifted population. Some of the more common ones used today in public schools include: cluster grouping, differentiation, mentorships enrichment programs, mentorships, curriculum compacting, and acceleration. The undergirding philosophy of gifted services contains some basic assumptions that should be considered in evaluating program options for gifted students.

These assumptions are:

1. All students progress through challenging material at their own pace and gifted students often reach mastery in significantly less time than other learners.
2. Achieving success for all students is not equated with achieving the same results for all students.
3. Most students gain self-esteem and self-confidence by mastering work that at first seems slightly beyond their grasp.
4. Gifted middle level students need to be able to enter, exit, and reenter the gifted program as their interests and abilities change.
5. Gifted students do benefit from associating with students of different abilities and backgrounds.
6. Grouping of gifted learners should be based on students' abilities and talents in specific areas.
7. High-ability middle level students need access to a variety of challenging resources. (Rosselli, 1996, p. 14)

Enrichment

There are many types of enrichment including enrichment of the curriculum. For the purposes of this paper, enrichment addresses activities outside the regular classroom setting. In middle schools, the needs of gifted students are often addressed in such offerings. At the campus level, these are often referred to as enrichment activities. These activities include such things as writing the school newspaper, community service, and special before or after school activities (Rosselli, 1996). The majority of time, students participate in these activities before or after school or during the advisory time provided for in most middle schools. The advisory time in the middle school movement usually addresses the affective or social-emotional needs of the young adolescent (Beane, 1990). There is very little research available on the success of enrichment programs for gifted. None of the research addresses enrichment done in isolation from academics. Studies that include this type of enrichment as part of an overall program including academic enrichment are positive for gifted students (Feldhusen & Moon, 1992b; Taradash, 1994).
Mentorships

Paul Torrance (1984) conducted a longitudinal study of over 200 creative students. He concluded in his study that every successful person had some special teacher who changed the course of life for that individual. These teachers served as role models for life-long learning (Torrance, 1984). In today's world, too many youth do not have access to caring adults who can promote the optimal development of their gifts and talents (Nash, Haensly, Rogers, & Wright, 1993). Mentors are needed for specific career exposure and career guidance, as well as for general social and emotional development (Arnold, 1995; Haensly, 1989; Torrance, 1984).

Mentors in the workplace demonstrate enthusiasm for the field as well as sharing expert knowledge. These qualities are critical for making outstanding contributions and creative breakthroughs in the field (Arnold, 1995). Middle school students need to have access to both teacher mentors and workplace mentors. It is difficult for middle school students to go to the workplace because of transportation issues. Having mentors from the workplace to the school is beneficial.

Cluster Grouping

Cluster grouping is an administrative procedure in which gifted students at a grade level are divided into groups of approximately five students. Each small group forms a cluster. Each cluster of five students is placed in a heterogeneous classroom. The teachers, who have these small
clusters of gifted students within their classroom of regular students must have special training in how to teach gifted students (Schuler, 1997). Cluster grouping is being used more frequently as a program option for gifted students (Gentry, 1996; Hoover, Sayler, & Feldhusen, 1993).

In August 1993 the National Research Center of the Gifted and Talented conducted the Cluster Grouping Survey (Schuler, 1997). This first survey was sent to 131 collaborative school districts. The second survey looked at 23 nationwide districts that used cluster grouping as a program option (Schuler, 1997). The survey found that many districts using cluster grouping need guidance in planning an effective program. The following is a list of items developed by Kaplan (1974) that addresses planning a cluster group:

1. Develop criteria for selecting students.
2. Define the qualifications of and the selection process for the teachers.
3. Plan the differentiated experiences for the cluster of gifted students.
4. Plan for support services and special resources. (p. 27)

Cluster teachers must be sufficiently trained to work with gifted students. Coleman (1994) offers the following curriculum strategies for cluster teachers to include: curriculum compacting, acceleration, and enrichment in the content areas.

**Differentiation**

Differentiation is about adapting the regular curriculum to meet the needs of gifted students. The key to differentiation meeting the needs of
gifted students is the knowledge and ability of the teacher to provide the appropriate strategies (Tomlinson, 1994).

Tomlinson (1994) believed that middle schools and appropriate education for gifted students can coexist successfully. In order for this to take place, it must be understood that gifted learners have needs that are different from those of the general school population. Tomlinson conducted a case study at a middle school to determine how and why teachers will adapt to differentiating curriculum for academically diverse students in the heterogeneous middle school classroom when mandated to do so by school policy. Her work with teachers yielded some general suggestions that apply to teacher success. These include:

1. **Acknowledge and celebrate the differences of gifted learners.** Gifted students have been aware for a long time that they are different. When middle school educators refuse to recognize these differences, they confuse the student.

2. **Focus equally on excellence and equity.** Meeting the needs of gifted students is not an elitist activity. Educators who focus only on at-risk learners may exert less energy in meeting the needs of the highly able.

3. **Provide opportunities for advanced learning.** Middle school literature warns of the dangers of "over-challenging" adolescents. This causes the curriculum to be focused on basic skills and topics that are examined at the exploratory level. Gifted students need the kind of learning opportunities that will challenge them by providing opportunities for them to use their advanced thinking and problem-solving abilities.

4. **Make sure gifted learners both excel and fit in.** Often gifted middle schoolers feel they must disguise or abandon their abilities in order to be accepted. This is especially true for academically talented females and minority students. Educators need creative learning opportunities that allow advanced learners to continue developing their abilities and to belong to a peer group that values and accepts them as they are.
5. **Understand that no one instructional strategy is appropriate for gifted (and other) learners.** A teacher should have a wide variety of strategies available to use with students. These strategies should vary in depth and complexity as they relate to the varying abilities of the students.

6. **Be sure your teachers are ready for differentiated instruction.** Most middle school teachers learned to teach in classrooms where students did the same lessons, used the same materials, worked at the same pace, and stayed together. This is not the best method of instruction for any student including the gifted. Teachers must have training, encouragement, and opportunities to experiment for differentiation to evolve (Tomlinson, 1994, p. 53).

If the appropriate implementation for differentiating the curriculum does not take place, the results can be devastation to the gifted student in the regular classroom. Research conducted by Plucker and McIntire (1996) studied the behaviors gifted students used to cope with a lack of challenge in the regular classroom. These behaviors included selected attention (not paying attention to teacher), focusing attention at will, or participating in activities other than class lessons. Some students attempt to make nonchallenging work more challenging by engaging the teacher in more complex discussion or improving skills such as note taking. Others will assist peers to do projects with other gifted students. Sometimes students use humor in an attempt to stimulate themselves intellectually. Almost all middle school gifted students are involved in extracurricular activities. Finally, some high ability students in the study reached the point where they put out little or no effort and in effect dropped out even while staying in school.
These findings suggest a tremendous impact on public education and our society in general if we lose these students. Not only are they not reaching their own personal potential, but society is losing the talents, problem-solving, and potential discoveries that they can offer to the public in general. In dropping out, we not only lose their positive economic contribution but possibly cause them to become an economic drain.

Curriculum Compacting and Acceleration

"Curriculum compacting is a flexible, research-supported instructional technique that enables high-ability students to skip work they already know and substitute more challenging content" (Reis, Burns, & Renzulli, 1992, p. 51). A major problem in our schools today is the lack of curricular differentiation and academic challenge for our most able learners. Taylor and Frye (1988) found the 78% to 88% of the fifth and sixth grade average readers could pass pretests on the basal reader. Kirst (1982) indicated a two grade level drop in the reading level difficulty of basal readers over a 10 to 15 year time span. Usiskin (1987) found that not only did the level of difficulty drop, but the percentage of repetition has increased with a decrease in the amount of new material presented.

Curriculum compacting is not tied to a specific content area or grade level. It is adaptable to any curricular framework and is flexible enough to change with changing trends (Reis et al., 1992). Research supports the concept that compacting curriculum provides evidence of a student's
knowledge of the regular curriculum and enables the teacher to provide many types of differentiated learning, eliminate portions of curriculum that the student knows and open the door for interdisciplinary learning (Reis, Westberg, Julikowich, & Purcell, 1998).

Academic acceleration can be defined as "(educational) flexibility based on individual abilities without regard for age" (Paulus, 1984, p. 99). Acceleration can take on many forms: early entrance to school, grade-skipping, fast-paced classes in certain subjects, Advanced Placement in certain subjects, and college courses for high school students (Gold, 1982). The Study of Mathematically Precocious Youth produced some of the most significant work in the area of acceleration (Stanley & Benbrow, 1982).

Study of Mathematically Precocious Youth was founded by Julian C. Stanley in 1971 at the Johns Hopkins University. He pioneered the talent search model for the identification of gifted young people. This model involved junior high students qualifying for the talent search by scoring in the top percentiles of the Scholastic Aptitude Test. The long-term goal of the Study of Mathematically Precocious Youth longitudinal study of gifted students was to validate the talent search procedure and to better understand gifted students and the development of their abilities and achievements (Swiatek, 1993). One group of the study (Cohort 1) was involved in a fast-paced mathematics class. A follow-up was conducted of students who had participated in this class as a junior high student. The
follow-ups were conducted when the students were 18 years of age and at the completion of college (Swiatek, 1993). The study results concluded that the accelerated students, while younger than the comparison (average-ability) group, equaled the older students in academic achievement. The performance of the accelerated group might be longer and slower in a lock-step academic program.

The Study of Mathematically Precocious Youth research suggests acceleration benefits the students academically, and helps them build a strong foundation for future learning. The students were pleased with the outcome of their accelerated learning experience and their ability to be successful in college. The study did not find any negative psychosocial effects (Swiatek, 1993).

Another study that addressed the social, emotional, and behavioral adjustments of accelerated students was conducted by Sayler and Brookshire (1993). Their study investigated the social, emotional, and behavioral adjustment of gifted and regular eighth grade students (Sayler & Brookshire, 1993). A large cross-section of students was included in the study that sampled all geographic areas of the country, income levels, ethnic groups, public and private schools, and urban and rural schools.

The concern that acceleration would lead to academic, social, and emotional difficulties was not supported. The students who were accelerated by the eighth grade exhibited levels of emotional adjustment
and feelings of acceptance that were higher than regular students and about
the same as older gifted students (Sayler & Brookshire, 1993).

The Virginia Department of Education has published a document
that describes practices for the education of gifted students in the middle
school grades. Educational Implications for gifted Students in the Middle
School Grades is a very comprehensive framework for developing gifted
programs (Virginia Department of Education, 1990). This framework is
based on research conducted by Gallagher (1985), Halsted (1988), and Van
Tassel-Baska (1983). When making decisions about selecting ways to meet
the needs of gifted students, the following three questions should be
addressed: Will the program provide comprehensive and challenging
academic opportunities for gifted learners? Will the program recognize the
diversity among the gifted? To what extent and in what way should the
instructional program be differentiated for the gifted?

No matter what structure is adopted for the organization of the
middle school any program for middle learners should: acknowledge that
gifted students possess a broad range of abilities and achievement, and
recognize the unique learning needs of gifted students sometimes set them
apart. These needs may be reflected in the kind, depth, breadth, and pace
of instruction required to maintain a suitable level of challenge for students.
Summary

There is a great deal of research focusing on what successful middle schools should look like in terms of organization and curriculum. However, there is little empirical research supporting the existence of a majority of these types of middle schools or the academic success of such middle schools. Most of the research literature suggests gifted middle school students need to have their academic needs addressed in an intentional way. Several program options are endorsed, but little research exists to indicate one is better than another when each option is implemented in an appropriate manner.

There is even less credible research available concerning the development of the gifted student's potential in the middle school environment. Differentiation appears to be a viable option for meeting the needs of gifted students within a heterogeneous classroom. However, differentiation is dependent upon teacher training and the classroom teacher's willingness to provide for the academic needs of the gifted students within a mixed-ability classroom.

Acceleration has significant credible research to affirm its viability as a program option. Acceleration allows a student to advance at his/her own pace. This alleviates much boredom and loss of valuable instruction time.

The gaps in the research are significant. There are too few studies. The studies that do exist are not usually longitudinal in scope and look at small population groups. This study looks at three very different program
options for gifted students. The population while small is very similar in makeup. The indicators that are examined are exactly the same for Prescholastic Aptitude Tests and scores on Advanced Placement examinations. The content of the Advanced Placement courses and the leadership positions are very similar across the studied population. This study adds to the body of research specific results of programming options in a limited setting.
CHAPTER 3

METHODS AND PROCEDURES
OF THE STUDY

This chapter provides demographic information about the three middle schools involved in the study, the subject population, a description of the three middle schools participating in the study, an explanation of how the sample population was selected, and information about the purpose and content of the instruments employed. The presentation is divided into these five areas.

Demographic Information

The communities in which these middle schools were located have several similarities; both were easily accessible to the cities of Dallas and Fort Worth and were primarily residential/office at the time the subjects were in these middle schools. Comparative demographic characteristics of the three communities are provided in Table 1.

Sample

The subject sample consisted of students from two metropolitan school districts and three middle schools within those two districts. The
### Table 1

**Demographic Characteristics of Communities--1995**

<table>
<thead>
<tr>
<th>Middle School</th>
<th>Student Population</th>
<th>Neigh. Median Income ($)</th>
<th>Neigh. Average Home Value ($)</th>
<th>% of Ethnicity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Anglo</td>
</tr>
<tr>
<td>A</td>
<td>792</td>
<td>54,000</td>
<td>118,000</td>
<td>87.0</td>
</tr>
<tr>
<td>B</td>
<td>836</td>
<td>62,000</td>
<td>124,000</td>
<td>89.0</td>
</tr>
<tr>
<td>C</td>
<td>639</td>
<td>49,000</td>
<td>88,000</td>
<td>85.0</td>
</tr>
</tbody>
</table>

*Note.* Neigh. = Neighborhood

students were identified as gifted based upon criteria selected by the two school districts in accordance with the guidelines established by the Texas Education Agency (1987). The subjects were seniors in high school, who were identified as gifted students in middle school. The heterogeneous group had no formal instruction within a gifted and talented program. Each of the schools had mainstream programs in which the identified gifted and talented students attended all or part of their classes with regular students. School A had an enrichment program (activities such as writing a school newspaper or community service) for the identified gifted and talented students. School A also offered an honors mathematics course which may have included some, but not all, of the identified gifted students. School B had Preadvanced Placement courses for the identified gifted and talented
students, and School C served all of the gifted students in the regular classroom with the classroom teacher responsible for providing the gifted and talented students with differentiated curriculum.

The gifted and talented students from these three middle schools currently attend three high schools. Students from Middle School A were split with 12 students attending High School D and 79 attending High School E. Students from Middle School B attended High School E. Students from Middle School C attended High School F. All students involved in the gifted and talented program at one of the three designated middle schools and classified as a senior at one of the designated three high schools were given a survey to fill out during the English class or at the designated period for homeroom-type activities. All other students in each class also filled out the survey as well. The teachers wanted to give a survey to everyone in their class and not single out any students. Only surveys from students who were identified as gifted and talented in middle school and attended one of the three designated middle schools were included in this study.

This study involved a total of 239 students who participated in the study. Ninety-one attended Middle School A, 80 attended Middle School B, and 68 attended Middle School C.
Description of the Schools

Middle School A was located within a residential area and ranged from 650 to 800 students during the period of time that the students in the study attended it. The school was considered a middle income school and served grades 6 through 8. Middle School A had a regular middle school program with honors classes in mathematics in which some gifted students, but not all, participated. The students were heterogeneously grouped in the other core subject areas. Elective opportunities included: fine arts (band, choir, art, and drama), boys and girls athletic teams, home economics, industrial arts, and journalism. All sixth graders participated in a rotation of electives designed to achieve an overview of different areas of interests such as art, music, home economics, industrial arts, journalism, and sports. Students had opportunities for service through service clubs, aides to office, library, or counselor. When the students in this study attended middle school, Middle School A had a population of 87% Anglo and 13% minority (4.3% African-American, 3.7% Hispanic 2.4% Asian, and 2.6% other) with 9.2% of the students classified as economically disadvantaged.

Middle School A identified students for their gifted program using a matrix of indicators. These indicators included a score on an abilities test in the 95 or above percentile range. Middle School A used the Cognitive Ability Test (CogAT) for their abilities test. The teacher filled out a teacher rating scale and the parents filed out a rating scale that included the opportunity for parents to give examples to support their response.
Students were given the California Achievement Test with a score in the 90 percentile range and samples of the students' work were included. Students had to have three of the five indicators that met the criteria.

The program for these identified gifted and talented students at Middle School A consisted of doing various activities during the school’s advisory time such as publishing a school newspaper, reading to younger students, visiting the nursing home within walking distance from the school, and planning school socials. In 1995, Middle School A ceased to be a middle school and became a ninth grade center due to extremely crowded conditions at High School D. Middle School A had a gifted and talented facilitator on campus who had received training in the needs of gifted students. Each gifted and talented student usually saw the gifted and talented facilitator at least once per week in a small group setting during the 25 minute advisory period.

Middle School B was located within a residential area and ranged from 700 to 900 students during the period of time that the students in the study attended Middle School B. The school was considered a middle income school and served grades six through eight. Middle School B had an honors program consisting of Preadvanced Placement courses in mathematics and language arts in grades six through eight. In the eighth grade there were also Preadvanced Placement courses in science and social studies. Gifted students were included in these classes. The students were heterogeneously grouped in the other content areas. Elective opportunities
included: fine arts, athletic teams for boys and girls, home economics, and industrial arts. Sixth graders participated in a rotation of electives designed to achieve an overview of different areas of interest. Some of these electives might include journalism, sports, music, art, drama, home economics, computer activities, and other options. Middle School B had a population of 89% Anglo and 11% minority (4.2% African-American, 3.4% Hispanic, 3.0% Asian, and .4% other) with 11.6% of the students classified as economically disadvantaged.

Middle School B identified students for their gifted program by using a matrix that had several indicators. These indicators included a score on an abilities test in the 95 or above percentile range. Middle School B used the CogAT for their abilities test. The teacher filled out a rating scale that included the opportunities for parents to give examples to support their response. Students were given the California Achievement Test with a score in the 90 percentile range and samples of the students were included. Students had to have three of the five indicators that met the criteria.

The program for these identified gifted students at Middle School B consisted of participation in the Preadvanced Placement courses. Middle School B also had a gifted and talented class that met daily for one period. This class was usually during the time block that reading would be taught. This gifted and talented class was taught by a certified teacher who had obtained his/her endorsement in gifted education. This class would include study skills, use of time, reading of classic literature, and many discussion
groups. The grading in these classes was flexible. The students participated in academic competitions such as Pentathlon, Math Counts, and Odyssey of the Mind. Each student spent some time each week in their advisory period with the gifted and talented teacher.

Middle School C was located within a residential area and student enrollment had been stable for approximately 10 years ranging around the 700 mark. The school was considered a middle income school. Middle School C had a regular middle school program with accelerated mathematics classes. The accelerated mathematics classes were open only to students who made a certain score on a district test. Some, but not all, gifted students were included in these classes. The mathematics classes were accelerated by one grade level. The students are heterogeneously grouped in the other core subject areas. Elective opportunities included fine arts, athletic teams, home economics, and computer classes. All students met in each class daily for a 45 minute time period. There was an advisory period, but it was less formal and functioned more like a homeroom period.

Middle School C had a population of 85% Anglo and 15% minority (2.2% African-American, 6.8% Hispanic, 3.4% Asian, and 2.6% other) with 13.2% of the students classified as economically disadvantaged.

Middle School C identified students for their gifted program using a matrix that had several indicators. These indicators included a score on an abilities test in the 95 or above percentile range. Middle School C used the CogAT for their abilities test. The teacher filled out a teacher rating scale
and the parents filled out a rating scale that included the opportunity for parents to give examples to support their response. Students were given the Iowa Test of Basic Skills (ITBSS) with a score in 90th percentile range and samples of students' work were included.

All students in Middle School C were heterogeneously grouped with inclusion policies for special education students as well as gifted students. Some teachers attempted to differentiate the curriculum for their gifted students. Other teachers could not name the identified gifted students in their classroom. When these particular students were in middle school, there was no requirement on the part of the district for these teachers to have any training in gifted and talented education.

High School D which had 12 of the students in this study had an enrollment of 2,938 (Table 2). High School D was extremely overcrowded.

Table 2

<table>
<thead>
<tr>
<th>High School Feeder Middle Schools</th>
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<tr>
<td>High School D</td>
</tr>
<tr>
<td>12 students from Middle School A</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>High School E</th>
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</thead>
<tbody>
<tr>
<td>Middle School B and 69 students from Middle School A</td>
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<table>
<thead>
<tr>
<th>High School F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Middle School C</td>
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and the ninth grade was being moved to a separate campus temporarily. High School D had a population of 83% Anglo and 17% minority (with the largest minority population being Hispanic). High School D had eight counselors. These counselors were assigned a certain part of the alphabet across the grades. All of these counselors visited the middle schools and explained the high school program to the students in the spring. The counselors took with them representatives (teachers and students) from each of the programs offered at the high school. The representatives from the honors program met with students from the middle school who had been recommended for the honors program and explained the program and encouraged students to pursue the more rigorous curriculum. All sophomores were given the Prescholastic aptitude Test. Those with certain scores were identified for a Preliminary Scholastic Aptitude Test preparation class that met daily for 9 weeks. These students took the Preliminary Scholastic Aptitude Test as juniors to compete for a national merit semifinalist slot.

High School E, which had 149 students from this study in attendance, had an enrollment of 2,756 students, with 86% Anglo and a minority population 14%. The largest minority group was Asian. High School E had eight counselors who visited the feeder middle schools each spring. These counselors took teachers and students from the various programs with them on these visits. Those who had been recommended for the honors program visited with high school representatives from these
programs and were encouraged to pursue the more rigorous courses at the high school level.

All sophomores at High School E took the Preliminary Scholastic Aptitude Test. Students with certain scores were encouraged to take a Preliminary Scholastic Aptitude Test preparation course for 9 weeks. These students took the Preliminary Scholastic Aptitude Test a second time as juniors to compete for a national merit semifinalist slot.

High School F had 68 students from this study. High School F had an enrollment of 3,128 students with an Anglo population of 85% and a minority population of 15%, the largest minority group being Hispanic. High School F had six counselors. These counselors visited the middle schools each spring to explain the high school program. They met with the group as a whole. Students who wished to take the Preliminary Scholastic Aptitude Test as sophomores could do so. From those who took the Preliminary Scholastic Aptitude Test, a cadre of students with high scores was identified. These students participated in a Preliminary Scholastic Aptitude Test academy that met 12 times between January of their sophomore year and October of their junior year. These students learned test-taking strategies.

Selection of the Sample

The surveys (Appendix) were distributed in all senior English classes on each of the high school campuses. Because High School D and High
School E were on the accelerated block class, those seniors not taking English the second semester, were given the surveys during the class that had a designated additional time for such activities. The teachers passed out the surveys in each class to be completed in class at that time, then the surveys were collected by the teachers and immediately sent to the office. The surveys from students who met the criteria of this study were pulled from the group and used for the collection of data.

Instrumentation

Surveys were collected from all students. Surveys of students who checked that they were in a gifted program in middle school were pulled from the group and used in this study. Information given by students was verified against school records. The verified information included participation in a middle school gifted program, Preliminary Scholastic Aptitude Test scores, Advanced Placement courses taken, and scores on Advanced Placement examinations. The researcher relied upon the students' responses as to education level of parent and leadership positions held.

Analysis was performed on data provided by the surveys. Differences across middle schools were investigated for the following: number of leadership positions held, number of Preadvanced Placement and Advanced Placement classes taken, mother's education, father's education, number of Advanced Placement examinations taken, scores on Advanced Placement
examinations taken, and Preliminary Scholastic Aptitude Test scores. The data was in the form of counts and was clustered, contingency tables were formed, and the chi-square tests were performed. The chi-square test investigated independence. The tests investigated whether or not the programming options had a significant association with each item in the list. An analysis of variance was also used to examine the difference in Preliminary Scholastic Aptitude Test scores, leadership activities, and Advanced Placement courses among the schools.
CHAPTER 4

PRESENTATION OF DATA

Review of the Study

Three types of gifted programming options from three different middle schools in the North Texas metropolitan area were examined in this study to determine if those programming options had any impact on the choices that students made in high school relative to the Advanced Placement course work, Advanced Placement examinations attempted, scores on Advanced Placement examinations, Prescholastic Aptitude Test scores, and the number of leadership positions held in high school. The programming options included enrichment opportunities (school newspaper, community service, etc.), advanced academic course work, and heterogeneous grouping of students in the regular classroom.

Middle School A provided an enrichment program for the identified gifted students on its campus. This involved doing activities during the school's advisory time such as publishing the school newspaper, yearbook, or performing community service. Students had other opportunities for service including reading to younger students and planning school socials.

Middle School B offered honors courses for the identified gifted and talented students. Students were offered Preadvanced Placement courses in
mathematics and language arts in grades six through eight. In the 8th grade, Pre-advanced Placement courses were also offered in science and social studies.

Middle School C served all of the gifted students in the regular, mixed-ability classrooms with the classroom teacher responsible for providing the gifted and talented students with differentiated curriculum. Middle School C offered an accelerated mathematics program for students who scored a certain score on a district-wide mathematics placement test. Some, but not all, of the gifted students participated in the accelerated mathematics courses.

Middle Schools A, B, and C were located in middle class residential neighborhoods. The number of students in the middle schools ranged from approximately 650 to 850, Middle School B being the largest and Middle School C being the smallest. Middle Schools A and B were undergoing tremendous growth and Middle School C was stable. Middle School A's ethnic make-up included 87% Anglo, 4.3% African-American, 3.7% Hispanic, 2.4% Asian, and 2.6% other. Middle School B's ethnic make-up included 89% Anglo, 4.2% African-American, 3.4% Hispanic, 3.0% Asian, and .4% other. Middle School C's ethnic make-up included 85% Anglo, 2.2% African-American, 6.8% Hispanic, 3.4% Asian, and 2.6% other.

The gifted students from these three middle schools currently attend three high schools. Middle School A had its population split with 12 students attending High School D and 79 students attending High School
E. Students who attended Middle School B attend High School E. Students who attended Middle School C attend High School F. A total of 239 students, identified as gifted and talented in middle school completed the survey. Ninety-one students attended Middle School A, 80 students attended Middle School B, and 68 students attended Middle School C.

The students at all three middle schools were identified as gifted using similar criteria. All three used the Cognitive Abilities Test for the abilities measure with a cutoff of 95 percentile or higher. Middle Schools A and B used the California Achievement Test with a cutoff score of 90 percentile or above on the subtests of mathematics and reading. Middle School C used the Iowa Test of Basic Skills with a cutoff score of 90 percentile or above on the subtests of mathematics and reading. Schools A, B, and C used parent and teacher rating scales. Students at all three middle schools had to have three of the five indicators that met the criteria to be admitted to the gifted program. High Schools D, E, and F had Advanced Placement programs, similar opportunities for leadership, and all seniors (who took the Preliminary Scholastic Aptitude Test as juniors) took the same test on the same day as administered by the College Board. The Advanced Placement examinations administered are standardized examinations written and graded by the College Board.

Surveys were distributed in all senior English classes on each of the high school campuses. Because High School D and High School E were on the accelerated block schedule, those seniors not taking English the second
semester were given the surveys during the class that had designated additional time for such activities. Teachers passed out the surveys in each class to be completed in class at that time, then the surveys were collected by the teachers and immediately sent to the office. The surveys from students who were identified as gifted and talented in middle school, were pulled from the group and used for the collection of data. Information given by the student was verified against school records. The verified information included participation in a middle school gifted program, Preliminary Scholastic Aptitude Test scores, Advanced Placement courses taken, Advanced Placement examinations attempted, and scores on Advanced Placement examinations. The assumption was made that student responses concerning leadership positions and education level of parents were accurate. Student leadership positions were verified where possible. In almost all cases, the information given by the students was accurate when verified by student records.

Analysis was performed on data provided by the surveys. Differences across the middle schools were investigated for the following: the number of Advanced Placement courses taken, the number of students attempting Advanced Placement examinations, scores on Advanced Placement examinations, Preliminary Scholastic Aptitude Test scores, and number of leadership positions taken.
Testing the Hypotheses

Hypothesis 1

Hypothesis 1 states that there are statistically significant differences in the number of Advanced Placement courses taken by students who participate in an enrichment program, in an advanced academic-based middle school program, or in heterogeneous grouped classrooms.

The data used to compare the number of courses taken by students in the three settings were obtained by surveys (Appendix) completed by the students and verified by student records. Students from Middle School A participated in an enrichment program, students from Middle School B participated in an academic-based program, and in Middle School C students were heterogeneously grouped.

School A had 88 students respond to the question, School B had 80 students respond to the question, and School C had 65 students respond to the question. As shown in Figure 2, School A had 26.1% of its gifted students take five or more Advanced School Placement courses. School B had 65% of its gifted students take five or more advanced Placement courses, and School C had 6.2% of its students take five or more Advanced Placement courses. School A had 67% of its students take three or four Advanced Placement courses. School B had 30% of its gifted students take three or four Advanced Placement courses. School C had 58.5% of its gifted students take three or four Advanced Placement courses. School A
had 6.8% of its gifted students take two or less Advanced Placement courses. School B had 5% of its gifted students take two or less Advanced Placement courses and School C had 35.4% of its students take two or less Advanced Placement courses.

Hypothesis 1 was tested using the chi-square test. The chi-square test tests independence. That is the test investigates whether or not the type of program provided for gifted and talented students in middle school has a significant association with the number of Advanced Placement courses taken. The test yielded that $X^2$ equals 4.07869 ($p = .001$) indicating that there is a significant association between the type of program provided for gifted students in middle school and the number of
Advanced Placement courses taken. Therefore, the test of independence is rejected.

To examine the data in a somewhat different perspective, an analysis of variance test was performed. The total number of Advanced Placement courses taken differed significantly across schools ($f = 12.25$, $df = 2$, $p < .001$ using analysis of variance) and further pairwise comparisons reveal that all schools differed significantly from one another. School C had the lowest average number of Advanced Placement courses taken per student, 2.19 (SD 1.53). School A had an average of 3.71 (SD 1.28), and School B had an average of 4.39 (SD 1.08) Advanced Placement courses per student.

**Hypothesis 2**

Hypothesis 2 states that there is a statistically significant difference in the number of students attempting an Advanced Placement examination by students who participate in an enrichment program, in an advanced academic-based program, or are served in heterogeneous grouped classrooms.

The data used to compare the scores on Advanced Placement examinations taken by students in these settings were obtained from student records. The largest number of Advanced Placement examinations that had been completed by these students, who were in the second semester of their senior year, was four. School A had 5.5% of its identified gifted students take four Advanced Placement examinations, School B had
8.8% and School C had 2.9%. School A had 15.4% of its identified students take three Advanced Placement examinations, School B had 43.8% of its identified students take three Advanced Placement examinations, and School C had 8.8% of its identified students take three Advanced Placement examinations. School A had 39.6% take two Advanced Placement examinations, School B had 22.5% take two Advanced Placement examinations, and School C had 26.5% take two Advanced Placement examinations. School A had 6.6% take one Advanced Placement examination, School B had 6.3% take one Advanced Placement examination, and School C had 30.9% take one Advanced Placement examination. School A had 33.0% take no examinations, School B had 18.8% take no examinations, and School C had 30.9% take no examinations. This data is illustrated in Figure 3.

Using the analysis of variance, there is a significant difference across schools in the number of Advanced Placement examinations taken (p < .001). Paired comparisons of the schools revealed that students at Schools A and C took significantly fewer Advanced Placement examinations than students at School B. On average, students at School B took 2.18 examinations while students at School A and C took, on average, 1.54 and 1.22 examinations respectively. Having found a significant difference, the test of independence is rejected.
Hypothesis 3

Hypothesis 3 states that there are statistically significant differences in the scores on Advanced Placement examinations taken by students who participate in an enrichment program, an advanced academic-based middle school program, or are served in heterogeneous grouped classrooms.

The data used to compare the scores taken by students in these settings were obtained from student records. The percentage of students from each school who scored three or higher on an Advanced Placement examination is depicted in Figure 4. A score of three or higher was used because colleges and universities will award college credit for scores of three or higher. School A had 93.4% of its students with at least one Advanced Placement examination score at or above three. School B had 96.9% of its
students with at least one Advanced Placement examination score at or above three. School C had 74.5% of its students with at least one Advanced Placement examination score at or above three.

The chi-square test yielded $X^2$ equals 0.0002966 ($p = .001$), indicating that the program and Advanced Placement examination scores are related. Therefore, the hypothesis of independence is rejected. There is no significant difference in the scores of School A and School B. However, when compared with School C, there is a significant difference.

**Hypothesis 4**

Hypothesis 4 states that there are statistically significant differences in the scores on Preliminary Scholastic Aptitude Test taken by students
who participated in an enrichment program, an advanced academic-based middle school program, or are served by heterogeneous grouped classrooms.

The data were obtained from student test scores reported by the College Board. Students who scored 212 and above were identified as National Merit Semifinalists. Students who scored 193 to 209 were recognized as Commended Scholars. School A had 7.5% of its identified gifted students score 212 or higher. School B had 10.7% of its gifted students score at 212 or higher. School C had 5.5% of its gifted students score at 212 or higher.

School A had 32.5% of its students score between 193 and 209, School B had 30.7% and School C had 16.4%. School A had 41.3% score between 180 and 190, School B had 49.3%, and School C had 18.2%. School A had 10% score between 170 and 180, School B had 5.3%, and School C had 38.2%. School A had 8.8% score between 150 and 170, School B had 4.0%, and School C had 21.8%. The chi-square test was used to determine if the school attended and the score on the Preliminary Scholastic Aptitude Test had a statistically significant association. The p-value resulting from the testing was $p = 0.001$, indicating that the school attended and the Preliminary Scholastic Aptitude Test score are related. Therefore, the hypothesis of independence is rejected. These data in percentage form are depicted in Figure 5.

The chi-square test was used to determine if the school attended and the score on the Preliminary Scholastic Aptitude Test had a statistically
significant association. The p-value resulting from the testing was 
(p = .001), indicating that the school attended and the Preliminary
Scholastic Aptitude Test are related. Therefore, the test of independence is
rejected.

An analysis of variance was also ran of the data. Preliminary
Scholastic Aptitude Test scores differ significantly across schools (p = .0002
using analysis of variance) and further pairwise comparisons reveal that
School C has significantly lower Preliminary Scholastic Aptitude Test scores
than either School A or B. Average Preliminary Scholastic Aptitude Test
scores by school are: School A, 189.69 (SD 18.33); School B, 192.57 (SD
14.56); and School C, 169.57 (SD 15.82).
Hypothesis 5

Hypothesis 5 states that there are statistically significant differences in the number of leadership positions held by students who participated in an enrichment program, an advanced academic-based middle school program, or are served in heterogeneous grouped classrooms.

Less than 1% of the students from each of the three middle schools did not participate in at least one leadership activity. Leadership activities were defined for the purpose of this study as students holding an office position (president, vice president, secretary, treasurer, or team captain) in campus organizations that are governance (student government), honor (National Honor Society, Key Club), content (Spanish, mathematics, science), athletic, or service (band, Thespians) in nature. School A had 90 out of 91 gifted students answer the leadership part of the survey. School B had 80 out of 80 gifted students answer the leadership questions. School C had 68 out of 68 gifted students answer the leadership questions on the survey. The data used to provide the information for this hypothesis were obtained from the student questionnaires and verified when possible by school personnel. When unable to verify the student information, the assumption was made that the student reported the information accurately. In almost all cases, student answers given on the survey were accurate when verified. As shown in Figure 6, School A had 34.4% of its identified gifted students participate in five or more leadership activities. School B had 5.0% of its gifted students participate in five or more leadership activities,
and School C had 7.4% of its gifted students participate in five or more leadership activities. School A had 37.8% of its gifted students participate in three or four leadership activities, School B had 35.0% of its gifted students participate in three or four leadership activities, and School C had 69.1% of its gifted students participate in three or four leadership activities.

School A had 27.8% of its identified gifted students participate in two or less leadership activities, School B had 60% of its gifted students participate in two or less leadership activities, and School C had 23.5% of its gifted students participate in two or less leadership activities. School A had eight gifted students who did not participate in any leadership activity, School B had eight gifted students who did not participate in any leadership activity,
activity, and School C had six gifted students who did not participate in any leadership activity.

The chi-square test was used to test Hypothesis 4. The test investigates whether or not the school attended has a significant association with the scores on the number of leadership positions that the students held. The test yielded $\chi^2$ equals 4.7688 ($p = .001$), indicating that the school and the number of leadership positions are related. Students who participated in the middle school gifted program that focused on enrichment participated in more leadership activities than did students in the heterogeneously grouped classroom or academic based program. Therefore, the test of independence is rejected.

An analysis of variance was also conducted to provide the information in an additional form. The total number of leadership activities differ significantly across schools ($p = .0001$ using analysis of variance) and further pairwise comparisons reveal that all schools differ significantly from one another. School B has the lowest average number of leadership activities per student, 2.08 (SD 1.20). School C has an average of 2.94 (SD .75) leadership activities per student, and School A has an average of 3.34 (SD 1.43).

In addition, considering all students combined, the total number of Advanced Placement courses taken by the students and the number of leadership activities are inversely related ($r = -0.44, p < .0001$). By school, the correlation of the number of Advanced Placement classes and the
number of leadership activities is: School A, \( r \) equals -0.475 (\( p < .0001 \)); School B, \( r \) equals -0.801 (\( p < .0001 \)); School C, \( r \) equals .023 (not significantly different from zero). These correlations are illustrated in Table 3.

To have a more complete view of the students from each campus, an additional question was added to the survey. The survey asked the students to circle the education level of each parent. Their choices were high school, college, and post graduate. School A reported that 32.3% of the identified gifted students' mothers had only a high school education, School B reported that 30.0% of the gifted students' mothers had only a high school education, and School C reported that 56.3% of the gifted students' mothers had only a high school education. School A reported that 65.6% of the gifted students' mothers had a college education, 70% of the gifted mothers had only a high school education. School A reported that 65.6% of the gifted students' mothers had a college education, 70% of the gifted mothers had only a high school education. School A reported that 65.6% of the gifted students' mothers had a college education, 70% of the gifted students at School B reported mothers with a college education, and 42.2% of the gifted students at School C reported mothers with a college education. School A's gifted students reported 2.2% of their mothers had post graduate degrees, School B's gifted students reported 0.0% of their mothers had post graduate degrees, and School C's gifted students reported 1.6% of their mothers had post graduate degrees. The percentage of
### Table 3

**Correlations by School of Students with Five or More Leadership Positions and Five or More Advanced-Placement Courses**

<table>
<thead>
<tr>
<th></th>
<th>AP Courses</th>
<th>Leadership</th>
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<tr>
<td><strong>School A</strong></td>
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</tr>
<tr>
<td>Pearson correlation</td>
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<td></td>
</tr>
<tr>
<td>AP courses</td>
<td>1.000</td>
<td>-.475**</td>
</tr>
<tr>
<td>Leadership</td>
<td>-.475**</td>
<td>1.000</td>
</tr>
<tr>
<td>Significance (2-tailed)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AP courses</td>
<td>--</td>
<td>.000</td>
</tr>
<tr>
<td>Leadership</td>
<td>.000</td>
<td>--</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AP courses</td>
<td>91.000</td>
<td>91.000</td>
</tr>
<tr>
<td>Leadership</td>
<td>91.000</td>
<td>91.000</td>
</tr>
</tbody>
</table>

| **School B**  |            |            |
| Pearson correlation |            |            |
| AP courses     | 1.000      | -.801**    |
| Leadership     | -.801**    | 1.000      |
| Significance (2-tailed) |            |            |
| AP courses     | --         | .000       |
| Leadership     | .000       | --         |
| **N**          |            |            |
| AP courses     | 80.000     | 80.000     |
| Leadership     | 80.000     | 80.000     |

**Note.** **Correlation is significant at the 0.01 level (2-tailed). AP = Advanced Placement.**
mothers, by school, with high school, college, and post graduate work is shown in Figure 7.

![Bar chart showing percentage of mothers' education by school](chart.png)

**Figure 7.** Education of mother by school.

The chi-square test was used to investigate if a significant association existed between the school attended and the level of education of the parents. The first question asked for the level of education of the mother. The test yielded $x^2 = .02424$ ($p = .002$), indicating that the school attended and the mother's education indicate a statistically significant association. Therefore, the test of independence is rejected.

Students were also asked to circle the level of education of their fathers. Their choices were high school, college, and post graduate. The results are illustrated in Figure 8. The identified gifted students at School A
indicated that 8.0% of their fathers had only a high school education, gifted students at School B indicated that 25.0% of their fathers had only a high school education, and gifted students at School C indicated that 66.7% of their fathers had only a high school education. Gifted students at School A indicated that 57.5% of their fathers had a college degree, gifted students at School B indicated that 60.0% of their fathers had a college degree, and gifted students at School C indicated that 31.7% of their fathers had a college degree. Gifted students at School A indicated that 34.5% of their fathers had post graduate education, gifted students at School B indicated that 15.0% of their fathers had post graduate education, and gifted students at School C indicated that 1.7% of their fathers had post graduate education.
The chi-square test was used to indicate if a statistically significant association existed between the school attended and the level of education of the father. The test yielded $X^2$ equals 4.71006 ($p = .001$), indicating that the school attended and the level of education of the father are related. Therefore, the test of independence is rejected.
CHAPTER 5

SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to examine three of the most widely used program options offered in Texas to meet the needs of middle school gifted students and to determine the possible effect these options might have on students in high school. The program options investigated included an academic-based gifted program (honors classes), an enrichment program (publishing the school newspaper, yearbook, or performing community service), and heterogeneous (mixed-ability) grouping of all middle school students with the classroom teacher responsible for providing for individual differences. The problem addressed is a comparative analysis of whether the three programming options previously used in middle school services for gifted students have any impact on the number of Advanced Placement courses they pursue, the scores received on Advanced Placement examinations, their Prescholastic Aptitude Test scores, and the number of leadership roles participated in at the high school level.

To carry out the purpose of this study, the following hypotheses were tested:
1. There are statistically significant differences in the number of Advanced Placement courses taken by students who participate in an advanced academic-based middle school program, an enrichment program, or are served in heterogeneous grouped classrooms.

2. There are statistically significant differences in the number of students who attempted at least one Advanced Placement examination among the students who participate in an advanced academic-based middle school program, an enrichment program, or are served in heterogeneous grouped classrooms.

3. There are statistically significant differences in the scores on Advanced Placement examinations taken by students who participate in an advanced academic-based middle school program, an enrichment program, or are served in heterogeneous grouped classrooms.

4. There are statistically significant differences in the scores on Preliminary Scholastic Aptitude Tests taken by students who participated in an advanced academic-based middle school program, an enrichment program, or are served by heterogeneous grouped classrooms.

5. There are statistically significant differences in the number of leadership activities held by students who participate in an advanced academic-based middle school program, an enrichment program, or are served in heterogeneous grouped classrooms.
Schools Involved in Study

There were three middle schools involved in this study. The communities in which these middle schools were located have several similarities. All were easily accessible to the cities of Dallas and Fort Worth. All were built in residential neighborhoods. All had predominately Anglo populations with a growing minority population. Hispanic students, while not the largest minority group at all three campuses, was the fastest growing group. The students at each of the middle schools were identified for participation in the gifted program in much the same way. All were identified with the Cognitive Abilities test, a standardized achievement test, and input from parents and teachers. Each of the middle schools had mainstream programs in which the identified gifted students attended all or part of their classes with regular students.

Middle School A had a 3 year average of 792 students with a median neighborhood income of $54,000. The population consisted of 87% Anglo, 4.3% African-American, 3.7% Hispanic, 2.4% Asian, and 2.6% other. Middle School A had a regular middle school program with honors classes in mathematics. The students were heterogeneously grouped in the other core subject areas. Elective opportunities included: fine arts, athletic teams, home economics, industrial arts, and journalism. All sixth graders participated in a rotation of electives designed to give the students experience in each elective area. Students had opportunities for service
through service clubs and through serving as aides to the office, library, or counselor.

The program for identified gifted students at Middle School A consisted of doing various activities during the school's advisory time. These activities included things such as publishing a school newspaper, reading to younger students, visiting a nursing home, and planning school socials. Middle School A had a gifted and talented facilitator on campus. Each gifted student usually saw the gifted facilitator at least once a week in a small group setting during the 25 minute advisory period.

Middle School B had a 3 year average of 836 students with a median neighborhood income of $62,000. Middle School B had an Anglo population of 89%, and African-American population of 4.2%, a Hispanic population of 3.4%, an Asian population of 3.0%, and other population of 2.6%.

Middle School B had an honors program consisting of Preadvanced Placement courses in mathematics and language arts in grades 6 through 8. In the eighth grade, Preadvanced Placement courses were also offered in science and social studies. The students were heterogeneously grouped in the other content areas. Elective opportunities included: fine arts, athletic teams, home economics, and industrial areas. Sixth graders participated in a rotation of electives designed to provide an overview of the different possible areas of interest. Some of these electives might include journalism and computer science.
The program for the identified gifted students at Middle School B consisted of participation in Pre-Advanced Placement courses. Middle School B also had a gifted and talented class that met daily for one period. The class was during the time block that reading was taught. The gifted and talented class was taught by a certified teacher who had obtained the gifted education endorsement from the Texas Education Agency. This class included study skills, use of time, reading of classic literature, and many discussion groups. The grading was flexible. Students also participated in academic competitions such as Pentathlon, Math Counts, and Odyssey of the Mind. Each student spent some time each week in their advisory period with the gifted and talented teacher.

Middle School C had a 3 year average of 639 students with a neighborhood median income of $49,000. Middle School C’s population was 85% Anglo, 2.2% African-American, 6.8% Hispanic, 3.4% Asian, and 2.6% other.

Middle School C had a regular middle school program with accelerated mathematics classes. The accelerated mathematics classes were open only to students who made certain scores on district tests. Some, but not all, of the gifted students were included in these classes. The mathematics classes were accelerated by one grade level. The students were heterogeneously grouped in the other core subject areas. Elective opportunities included fine arts, athletics, home economics, and computer
classes. All students met in each class daily for a 45 minute time period.
The advisory period functioned as a homeroom period.

All students in Middle School C were heterogeneously grouped with inclusion policies in place for all students. The classroom teachers were to provide differentiated instruction for their gifted students.

Three high schools from two different school districts in the North Texas metropolitan area participated in the study. Middle School A had 12 gifted students who attended High School D. High School D had an enrollment of 2,938 students at the time of this study. High School D was extremely overcrowded and the ninth grade was moved temporarily to a separate campus. High School D had a population of 83% Anglo and 17% minority (with the largest minority population being Hispanic). High School D had eight counselors that visited the middle schools in the spring. The counselors took representatives from the honors programs with them for three visits.

High School E had the remaining 69 gifted students from Middle School A and all of the students from Middle School B. High School E had an enrollment of 2,756 students, with an Anglo population of 86% and a minority population of 14%. The largest minority group was Asian. High School E had eight counselors who visited the feeder middle schools each spring. The counselors took representative honors program teachers with them for these visits.
High School F had the 68 gifted students from Middle School C in attendance. High School F had an enrollment of 3,128 students with an Anglo population of 85% and a minority population of 15%, the largest minority group being Hispanic. High School F had six counselors. These counselors visited the middle schools each spring to explain the high school program.

High Schools D, E, and F, which the students attended at the time of the study, were very similar in the number and type of Advanced Placement courses offered and the opportunities for leadership positions available. High Schools D and E had counselors who visited their feeder schools each Spring and took representatives from each program offered at the high school. Representatives from the honors program met with students from the middle school who had been recommended for the honors program and encouraged gifted students to pursue to more rigorous curriculum. High School F had counselors who visited their feeder middle schools and met with the groups as a whole.

High Schools D and E administered the Preliminary Scholastic Aptitude Test to all sophomores. Students with certain scores were encouraged to take a Preliminary Scholastic Aptitude Test preparation course of 9 weeks offered as a local credit. High School F encouraged sophomores to take the Preliminary Scholastic Aptitude Test. From those who took the Preliminary Scholastic Aptitude Test, a cadre of students with high scores were invited to participate in a Preliminary Scholastic Aptitude
Test academy that met 12 times between January of their sophomore year and October of their junior year.

All three high school campuses were extremely cooperative in arranging for a set time to administer the surveys and collecting the surveys. The administrators and counselors at each high school were helpful in providing access to student records and released testing information.

Findings

Hypothesis 1, which states there are statistically significant differences in the number of Advanced Placement courses taken by students who participate in an enrichment program, an advanced academic-based middle school program, or are served in heterogeneous grouped classrooms, was accepted. Middle School B, which did have the academic-based middle school program, had the largest percentage (65%) of students taking five or more Advanced Placement courses (Middle School A averaged 3.71%, Middle School B averaged 4.39%, and Middle School C averaged 2.19%). Middle School C, which had the heterogeneously grouped program had the highest percentage (35.4%) of students taking two or less Advanced Placement courses. Using the chi-square test, statistically significant differences were found between Schools A and B, A and C, and B and C in the number of Advanced Placement courses taken by students who attended the three different middle schools.
Hypothesis 2, which states that there are statistically significant differences in the number of Advanced Placement examinations attempted by students who participate in an enrichment program, an advanced academic-based middle school program, or are served in heterogeneous grouped classrooms was accepted.

Middle School B, with the advanced academic program, led the way with 8.8% of the students taking four examinations, 43.8% taking three examinations, 22.5% taking two examinations, 6.3% taking one examination, and only 18.8% not taking any examinations. Middle School A, with the enrichment program, had 5.5% of the gifted students take at least four examinations, 15.4% take three examinations, 39.6% take two examinations, 6.6% take one examination, and 33.0% not taking any examinations. Middle School C, with the heterogeneous grouping, had 2.9% of the gifted students who took four Advanced Placement examinations, 8.8% who took three Advanced Placement examinations, 28.5% who took two Advanced Placement examinations, 30.9% who took at least one Advanced Placement examination, and 30.9% who did not take any Advanced Placement examinations.

Using analysis of variance, there was a significant difference across schools in the number of Advanced Placement examinations taken. Paired comparisons of the schools revealed that students at Schools A and C took significantly fewer Advanced Placement examinations than students at School B. On average, students at School B took 2.18 examinations while
students at Schools A and C took on average 1.54 and 1.22 examinations respectively.

Hypothesis 3, which states that there are statistically significant differences in the score on Advanced Placement examinations attempted by students who participate in an enrichment program, an advanced academic-based, or are served in heterogeneous classrooms, was accepted.

Students who earn a score of three or higher on an Advanced Placement examination usually receive college credit from the university that they will be attending. Middle School A had 93.4% of the gifted students who took Advanced Placement examinations to score a three or higher on at least one examination. Middle School B had 96.9% of the students score a three or higher. Middle School C had 74.5% of the gifted students score a three or higher on at least one Advanced Placement examination. Middle School A had 6.6% score below a three. Middle School B had 3.1% score below a three. Middle School C had 25.5% score below a three. Statistically significant differences were found in the scores on Advanced Placement examinations taken by students who attended the three different middle schools.

Hypothesis 4, which states that there are statistically significant differences in the scores on Preliminary Scholastic Aptitude Tests taken by students who participate in an enrichment program, an advanced academic-based middle school program, or are served in heterogeneous grouped classrooms, was accepted. Middle School A had 7.5% of the gifted
students who took the Preliminary Scholastic Aptitude Test examination to score 212 or higher, making them National Merit Semifinalists. Middle School B had the highest percentage scoring 212 or higher. They had 10.7% of their gifted students named as National Merit Semifinalists. Middle School C had 5.5% of its gifted students taking the Preliminary Scholastic Aptitude Test score 212 or higher. A score of 193 to 209 was used to name a student as a Commended Scholar for their senior year. Middle School A had 32.5% of its gifted students who took the Preliminary Scholastic Aptitude Test named as Commended Scholars. Middle School B had 30.7% of its students named as Commended Scholars. Middle School C had 16.4% of its students named as Commended Scholars. Scores in the range of 180 to 190 found 41.3% for Middle School A, 49.3% for Middle School B, and 18.2% for Middle School C. Middle School A had 10% score in the 170 to 180 range. Middle School B had 5.3% score in the 170 to 180 range. Middle School C had 38.2% score in the 170 to 180 range. The 150 to 170 range on the Preliminary Scholastic Aptitude Test found gifted students from Middle School A at 8.8%, Middle School B at 4.0%, and Middle School C at 21.8%. Statistically significant differences were found in the scores on Preliminary Scholastic Aptitude Tests taken by students who attended the three different middle schools. The average score for School A is 189.69, School B is 192.57, and School C is 169.57.

Hypothesis 5, which states that there are statistically significant differences in the number of leadership positions held by students who
participate in an enrichment program, an advanced academic-based middle school program, or are served in a heterogeneous grouped classrooms, was accepted. Leadership positions were defined as officers of student government, honor organization, content organization (mathematics, science, social studies, fine arts, language arts, foreign languages, etc.), service organizations, and athletics. Less than 1% of the gifted students who participated in the survey had not held at least one leadership position. Middle School A had 34.4% of the gifted students participate in five or more leadership positions. Middle School B had 5% of the gifted students participate in five or more leadership positions and Middle School C had 7.4% of its gifted students participate in five or more leadership positions. There is an inverse relationship between five or more Advanced Placement courses taken and participation in five or more leadership positions for Middle Schools A and B. Gifted students in School A averaged 3.34 leadership positions, School B averaged 2.08 leadership positions, and School C averaged 2.94 leadership positions.

Discussion

The data collected and analyzed suggest that in these two school districts in the North Texas suburbs, program options for gifted students in middle school do impact the choices they make in high school in relationship to courses taken and activities pursued. Students who pursued
the more rigorous academic curriculum in middle school were more likely to take the Advanced Placement courses in high school.

Students who were involved in enrichment activities in middle school were more likely to pursue more leadership roles in high school. Students who are involved in a significant number of extracurricular activities make a serious time commitment outside of the regular school day. Even the students attending the middle school with no focused gifted program participated in more leadership positions than the students from the academic-based program. However, in most instances, those students with more leadership positions did not pursue a rigorous academic program in high school. Time must be considered as a factor in this finding. Students who were taking a significant number of Advanced Placement courses must make a serious time commitment to study.

Students who participated in a focused middle school program took more Advanced Placement classes. Middle School A had 95.5% of its gifted students who responded to the survey take at least one Advanced Placement course. Middle School B had 97.5% of its reporting gifted students take at least one Advanced Placement course. Middle School C only had 80.9% of its gifted students who responded to the survey take at least one Advanced Placement course. Another contributing factor might include the type of middle school campus visits that were made by the high school counselors. Counselors from High Schools D and E visited the middle schools taking with them teachers and students from the honors program to visit with
interested students about the honors program. Counselors from High School F visited the middle schools and covered all aspects of the high school program with the entire group. Another consideration might be the mathematics program at Middle School A. Middle School A tested all fifth graders with a screening test to determine if they should participate in an accelerated mathematics class in middle school. Some, but not all, of the identified gifted students may have participated in the accelerated mathematics program.

Students involved in a more rigorous academic program in middle school tended to score somewhat higher on the Advanced Placement examinations. The students who had no focused middle school program tended to score lower on Advanced Placement examinations. This is somewhat significant because of the standardization of Advanced Placement courses. Teachers who teach Advanced Placement courses receive the training for their courses from the College Board. The Advanced Placement examinations are written by the College Board and are nationally standardized. Each student taking an Advanced Placement examination in a particular content area takes the same examination across the nation. Because of these common elements in Advanced Placement programs, the impact of middle school programming can be considered a factor in the lower scores.

It is evident when examining the Preliminary Scholastic Aptitude Test scores that students who participated in a focused, discrete middle
school program scored in the higher ranges of the Preliminary Scholastic Aptitude Test. Students who participated in the advanced academic-based middle school program had the higher number of students score in the upper ranges of the Preliminary Scholastic Aptitude Test. The results would indicate that in these high schools an advanced academic-based program impacts the academic success of gifted students in high school.

Students who participated in an enrichment program for gifted students in middle school held the most (average 3.34) leadership positions in high school. These students took fewer Advanced Placement courses in high school, but were generally successful in those courses that they did pursue. These students appear to have benefited from the leadership opportunities that they participated in while attending the enrichment program in middle school. Students who were heterogeneously grouped took more (average 2.94) leadership courses than those students in the academic-based program (average 2.08). These results indicate that students did benefit from a focused, discrete middle school program.

The education level of the parents was also examined in this study with some interesting results. Middle School A had 69.8% of mothers with a college or post graduate degree. Middle School B had 70% of mothers with a college or post graduate degree. Middle School C had 43.7% of mothers with a college or post graduate degree. Middle School A had 2.2% of mothers with a post graduate degree, Middle School B had none, and
Middle School C had 1.6%. A consideration in programming may be the expectations of the parents.

The education level of the fathers varied somewhat from the level of the mothers. Middle School A had 92.0% of the fathers with a college or post graduate degree. Middle School B had 75% of the fathers with a college or post graduate degree. Middle School C had 33.4% of the fathers with a college or post graduate degree. Middle School A had 34.5% of the fathers with a post graduate degree, Middle School B had 15% of the fathers with a post graduate degree, and Middle School C had 1.7% of the fathers with a post graduate degree. Again, parent expectations for more services for their gifted students may be impacted by the education level of the parent.

Conclusions

Based upon the findings in this research study, the following summary statements are consistent with the findings of this study.

1. Programming options offered for gifted and talented students do make a difference in the direction that they choose to emphasize in their high school choices. It would appear from this study that students from focused, discrete middle school programs choose a more active and challenging direction in high school in the areas of academic rigor and leadership.
2. Gifted and talented students respond to and need guidance and focus as do other student populations. This is clear in that Schools A and B did much better in all areas, with the exception of leadership, than did students from School C, which had heterogeneous classrooms.

3. In deciding the programming options to offer gifted students, educators should begin with the "end in mind." If the goal is for these students to pursue a rigorous academic curriculum in high school, it is necessary to provide the foundation before they enter high school. The students in the more rigorous and focused programs chose more advanced courses and performed better academically than the other students.

4. Gifted and talented students do not automatically seek opportunities to develop to their fullest potential. The findings are clearly evident that gifted students from School C, which did not have a focused, discrete middle school program, did not perform as well academically as gifted students from the other schools.

Significance of the Study

While this study is small in scope and only directly relates to a limited student population in the North Texas Metropolitan area, it does add to the limited body of knowledge on actual outcomes of different types of programming. Three types of programming options commonly used in middle school gifted programs are looked at in this study. The impact that each type of programming has on choices that the students made in their
high school careers in terms of advanced course work attempted and involvement in leadership positions was examined in this study. It was found that programming options do impact student choices. Gifted students who participated in focused, discrete middle school programs did better than their counterparts in all areas of the study except leadership. These findings have impact for educators seeking to identify effective instructional formats for meeting the educational needs of gifted students.

Recommendations for Further Study

In order to be competitive in a global economy and maintain a successful democracy, it is essential that we educate all of our population with basic skills for functioning successfully in society. To be able to lead the way in technology, medical science, inventions, communications, finance, defense, and every other area of life, it is essential that we develop our most capable students to their fullest potential. This does not happen by chance. It takes planning, commitment, and the expenditure of dollars. Educators must continue to study the most cost effective and productive effective ways to meet this challenge.

While this study has established that, with the population studied, focused, discrete programming for gifted students was beneficial, the research in this area is limited and often contradictory. Extensive research with larger populations and conducted over a longer period of time needs to be encouraged. Educators need to have an understanding of the differences
among gifted students and realize that not one particular program is going to meet the needs of the various levels or areas of giftedness.

Recommendations for Educators

In making decisions for appropriate programming for gifted students at the middle school level, educators should consider several factors indicated in this study. Students who participated in a focused, discrete middle school program performed higher in all levels of academic achievement. Students who had leadership stressed in middle school participated in leadership in high school. Students who had academic rigor stressed in middle school chose to pursue a more challenging academic schedule in high school. Educators should consider the value of designated gifted programs at the middle school level as well as elementary and high school levels.

Time issues appear to be paramount for high school students. It would appear from this study that expected time commitments make it difficult for at student to be balanced with time for both rigorous academics and extracurricular activities. Both teachers and leaders of extracurricular activities need to be aware of the total time demands made on students and not just in their particular area.

The high school counselors who visit the middle schools may have an impact on the students' choice of high school courses. The counselors who took teachers and students from the Advanced Placement program to the
middle school report an increase in the number of all students (not just gifted students) who pursue the Advanced Placement program. In planning programming for students, it is very important that we have a clear picture of what we wish the graduating student to have accomplished. Then all programming must be aligned with that objective.
APPENDIX
February 24, 1998

Dear Students:

I am a doctoral student at the University of North Texas in Denton, Texas. As part of my research, I am surveying the graduating class of 1998 at several area high schools. Your high school was one selected to participate in this survey.

I am requesting that you fill out the attached questionnaire and return it to your English teacher per his/her instructions. We will tally the data and submit it in terms of averages. At no time will your name or student I.D be used in any of the information. The only person having access to your name or student I.D number will be me.

I do appreciate your taking the time to complete the questionnaire carefully and accurately. I would like to wish each of you much success in the future.

Sincerely,

Brenda Lierin Curry
Survey

Student name ___________________________ Student I.D. # _______

Current grade _____ Middle school attended _______________________

Were you in the gifted program in middle school? Yes___ No____

List the AP courses that you have been or are currently enrolled in

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Check below the student organizations that you have participated in.
(If you have held the officer position of President, Vice-President, Secretary, or Treasure, or Captain, please indicate which position beside the appropriate organization.)

Class officer _____ National Honor Society

Student council ___ Senior Planning Board _____

Spirit/Service group ____ Drill Team _____

Peer Assistant Leadership ____ Cheerleader _____

Athletic team _____ Newspaper Staff _____

Band____ Yearbook Staff ______

Theatre Arts____

Content area clubs (Math, Science, Foreign Language etc.)_____
Please circle the level of education for each:

Mother:  HS  College  Post Graduate

Father:  HS  College  Post Graduate

At this point in your life, what level of education do you plan to seek?

HS  College  Post Graduate
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